What is claimed is:

Claim 1. An isolated DNA molecule encoding senescence-induced lipase, wherein the DNA molecule hybridizes under low stringency conditions with SEQ ID NO:1, SEQ ID NO:18 or both, or a functional derivative of the isolated DNA molecule which hybridizes with SEQ ID NO:1, SEQ ID NO:18 or both.

Claim 2. The isolated DNA molecule of claim 1 wherein the DNA molecule has the nucleotide sequence of SEQ ID NO:1.

Claim 3. The isolated DNA molecule of claim 1 wherein the isolated DNA molecule contains the nucleotide sequence of SEQ ID NO:4.

Claim 4. The isolated DNA molecule of claim 1 wherein the DNA molecule has the nucleotide sequence of SEQ ID NO:18.

Claim 5. An isolated senescence-induced lipase encoded by a nucleotide sequence which hybridizes under low stringency conditions with SEQ ID NO:1, SEQ ID NO: 18 or both, or a functional derivative of the senescence-induced lipase.

Claim 6. The senescence-induced lipase of claim 5 wherein the lipase has the amino acid sequence SEQ ID NO:2 or SEQ ID NO:19.

Claim 7. A vector for transformation of plant cells comprising

(a) antisense nucleotide sequences substantially complementary to (1) a corresponding portion of one strand of a DNA molecule encoding senescence-induced lipase, wherein the DNA molecule encoding senescence-induced lipase hybridizes under low stringency conditions with SEQ ID NO:1, SEQ ID NO:18 or both, or (2) a corresponding portion of an RNA sequence encoded by the DNA molecule encoding senescence-induced lipase; and

(b) regulatory sequences operatively linked to the antisense nucleotide sequences such that the antisense nucleotide sequences are expressed in a plant cell into which it is transformed.

Claim 8. The vector according to claim 7 wherein the regulatory sequences comprise a promoter and a transcription termination region.

Claim 9. The vector according to claim 7 wherein the regulatory sequences comprise a constitutive promoter.

Claim 10. The vector according to claim 7 wherein the regulatory sequences comprise a plant tissue-specific promoter.

Claim 11. The vector according to claim 7 wherein the regulatory sequences comprise a senescence-induced plant promoter.

Claim 12. The vector according to claim 7 wherein the regulatory sequences comprise a viral promoter.

Claim 13. The vector according to claim 7 wherein the regulatory sequences comprise a constitutive promoter.

Claim 14. An antisense oligonucleotide or polynucleotide encoding an RNA molecule which is substantially complementary to a corresponding portion of an RNA transcript of a plant senescence-induced lipase gene, wherein said plant gene hybridizes under low stringency conditions with SEQ ID NO:1, SEQ ID NO:18 or both.

Claim 15. The antisense oligonucleotide or polynucleotide according to claim 14 wherein the oligonucleotide or polynucleotide comprises about six to about 100 nucleotides.

Claim 16. The antisense oligonucleotide or polynucleotide according to claim 14 wherein the coding region of the plant gene has the nucleotide sequence SEQ ID NO:1.

Claim 17. The antisense oligonucleotide or polynucleotide according to claim 14 wherein the coding region of the plant gene has the nucleotide sequence SEQ ID NO:18.

Claim 18. The antisense oligonucleotide or polynucleotide according to claim 14 wherein the plant gene is a carnation gene.

Claim 19. The antisense oligonucleotide or polynucleotide according to claim 14 wherein the plant gene is an *Arabidopsis* gene.

Claim 20. The antisense oligonucleotide or polynucleotide according to claim 14 wherein the plant gene is a tomato gene.

Claim 21. The antisense oligonucleotide or polynucleotide according to claim 14 wherein the plant gene is a green bean gene.

Claim 22. The antisense oligonucleotide or polynucleotide according to claim 14 wherein the antisense oligonucleotide or polynucleotide is substantially complementary to a corresponding portion of the 5'-non-coding region of the RNA transcript.

Claim 23. A vector comprising

(a) a DNA molecule encoding senescence-induced lipase, wherein the DNA molecule hybridizes under low stringency conditions with SEQ ID NO:1. SEQ ID NO:18 or both; and

(b) regulatory sequences operatively linked to the DNA molecule such that the DNA molecule is expressed in a plant cell into which it is transformed.

Claim 24. A bacterial cell transformed with the vector according to claim 23.

Claim 25. A plant cell transformed with the vector according to claim 7.

Claim 26. A plant and progeny thereof generated from a plant cell transformed with the vector according to claim 7.

Claim 27. A plant, plant part or plant progeny according to claim 26.

Claim 28. A method for inhibiting the expression of endogenous senescence-induced lipase in a plant, said method comprising

(1) integrating into the genome of the plant a vector comprising

(A) antisense nucleotide sequences substantially complementary to (i) a corresponding portion of one strand of a DNA molecule encoding the endogenous senescence-induced lipase, wherein the DNA molecule encoding the endogenous senescence-induced lipase hybridizes with SEQ ID NO:1, SEQ ID NO:18 or both, or (ii) a corresponding portion of an RNA sequence encoded by the endogenous senescence-induced lipase gene; and

(B) regulatory sequences operatively linked to the antisense nucleotide sequences such that the antisense nucleotide sequences are expressed; and

(2) growing said plant, whereby said antisense nucleotide sequences are transcribed and bind to said RNA sequence, whereby expression of said senescence-induced lipase gene is inhibited.

Claim 29. The method according to claim 28 wherein the corresponding portion of the DNA or the corresponding portion of the RNA to which the antisense oligo- or polynucleotide is substantially complementary comprises 5'-non-coding sequences.

Claim 30. The method according to claim 28 wherein said inhibition results in altered senescence of the plant.

Claim 31. The method according to claim 28 wherein said inhibition results in increased resistance of said plant to environmental stress-induced senescence.

Claim 32. The method according to claim 28 wherein said inhibition results in enhanced biomass of said plant.

Claim 33. The method according to claim 28 wherein said inhibition results in increased seed yield in said plant.

Claim 34. The method according to claim 28 wherein the regulatory sequences comprise a constitutive promoter active in the plant.

Claim 35. The method according to claim 28 wherein the regulatory sequences comprise a double 35S promoter.

Claim 36. The method according to claim 28 wherein the regulatory sequences comprise a tissue specific promoter active in the plant.

Claim 37. The method according to claim 28 wherein the regulatory sequences comprise a senescence-induced promoter active in the plant.

Claim 38. The method according to claim 28 wherein said plant is selected from the group consisting of fruit bearing plants, flowering plants, vegetables, agronomic crop plants and forest species.

Claim 39. The method according to claim 28 wherein the plant is a tomato.

Claim 40. The method according to claim 28 wherein the plant is a carnation.

Claim 41. A method for inhibiting the expression of an endogenous senescence-induced lipase gene or genes in a plant cell, said method comprising

(1) integrating into the genome of at least one cell of the plant a vector comprising

(A) an isolated DNA molecule encoding exogenous senescence-induced lipase, wherein the DNA molecule hybridizes under low stringency conditions with SEQ ID NO:1, SEQ ID NO:18 or both, or a functional derivative of the isolated DNA molecule which hybridizes with SEQ ID NO:1, SEQ ID NO:18 or both; and

(B) regulatory sequences operatively linked to the DNA molecule such that the exogenous senescence-induced lipase encoded thereby is expressed; and

(2) growing said plant, whereby said DNA molecule is over-expressed and the endogenous senescence-induced lipase gene or genes is inhibited by exogenous senescence-induced lipase.

Claim 42. The method according to claim 41 wherein the regulatory sequences comprise a constitutive promoter.

Claim 43. A method of altering age-related senescence and environmental stress-related senescence in a plant, said method comprising

(1) integrating into the genome of the plant a vector comprising

(A) antisense nucleotide sequences substantially complementary to (i) a corresponding portion of one strand of a DNA molecule encoding the endogenous senescence-induced lipase, wherein the DNA molecule encoding the endogenous senescence-induced lipase hybridizes with SEQ ID NO:1, SEQ ID NO:18 or both, or (ii) at least a portion of an RNA sequence encoded by the endogenous senescence-induced lipase gene; and

(B) regulatory sequences operatively linked to the antisense nucleotide sequences such that the antisense nucleotide sequences are expressed; and

(2) growing said plant, whereby said antisense nucleotide sequences are transcribed and bind to said RNA sequence, whereby expression of said senescence-induced lipase gene is inhibited.

Claim 44. A transgenic plant cell comprising a vector according to claim 7.

Claim 45. A transgenic plant cell comprising a vector according to claim 23.

Claim 46. A plasmid comprising a replication system functional in a prokaryotic host and an antisense oligonucleotide or polynucleotide according to claim 14.

Claim 47. A plasmid comprising a replication system functional in *Agrobacterium* and an antisense oligonucleotide or polynucleotide according to claim 14.

Claim 48. A plant and progeny thereof, wherein said plant is derived from a cell having inhibited or reduced expression of senescence-induced lipase, said cell comprising a vector according to claim 7.

Claim 49. A plant and progeny thereof, wherein the plant is derived from a cell having inhibited or reduced expression of senescence-induced lipase, wherein said cell is produced by

(1) integrating into the genome of the cell a vector comprising

(A) antisense nucleotide sequences substantially complementary to (i) a corresponding portion of one strand of a DNA molecule encoding the endogenous senescence-induced lipase, wherein the DNA molecule encoding the endogenous senescence-induced lipase hybridizes with SEQ ID NO:1, SEQ ID

NO:18 or both, or (ii) a corresponding portion of an RNA sequence encoded by the endogenous senescence-induced lipase gene; and

(B) regulatory sequences operatively linked to the antisense nucleotide sequences such that the antisense nucleotide sequences are expressed; and

(2) growing said cell, whereby said antisense nucleotide sequences are transcribed and bind to said RNA sequence, whereby expression of said senescence-induced lipase gene is inhibited.

Claim 50. The plant and progeny according to claim 49 wherein the plant is a tomato.

Claim 51. The plant and progeny according to claim 49 wherein the plant is a carnation.

Claim 52. A method of inhibiting seed aging, said method comprising

(1) integrating into the genome of a plant a vector comprising

(A) antisense nucleotide sequences substantially complementary to (i) a corresponding portion of one strand of a DNA molecule encoding an endogenous aging-induced lipase, wherein DNA encoding said endogenous aging-induced lipase hybridizes with SEQ ID NO.:1, SEQ ID NO:18 or both, or (ii) a corresponding portion of an RNA sequence transcribed from a DNA molecule encoding an endogenous aging-induced lipase; and

(B) regulatory sequences operatively linked to the antisense nucleotide sequences; and

(2) growing said plant, whereby said antisense nucleotide sequences are transcribed and bind to said RNA sequence and expression of said aging-induced lipase gene is inhibited.

Claim 53. A method of increasing seed yield from a plant, said method comprising

(1) integrating into the genome of the plant a vector

comprising

(A) antisense nucleotide sequences substantially complementary to (i) a corresponding portion of one strand of a DNA molecule encoding an endogenous aging-induced lipase, wherein DNA encoding said endogenous aging-induced lipase hybridizes with SEQ ID NO.:1, SEQ ID NO:18 or both, or (ii) a corresponding portion of an RNA sequence transcribed from a DNA molecule encoding an endogenous aging-induced lipase; and

(B) regulatory sequences operatively linked to the antisense nucleotide sequences; and

(2) growing said plant, whereby said antisense nucleotide sequences are transcribed and bind to said RNA sequence and expression of said aging-induced lipase gene is inhibited.